

Appendix G – Galena Project BMPs

Watershed Report Appendix WS-7. Best Management Practices (BMPs) Recommended for the Galena Project.

BMPs are the primary mechanism for achievement of water quality standards. This appendix describes key BMPs that have been selected in addition to those listed in Table 3, Project Implementation Criteria and in PACFISH Standards and Guidelines for implementation with the proposed action.

Best Management Practices include but are not limited to structural and non-structural controls, operations, and maintenance procedures. BMPs would be applied before, during, or after pollution producing activities to reduce or eliminate the introduction of pollutants into receiving water-bodies.

BMPs are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility. Blue Mountain Ranger District monitors some applications of BMPs to evaluate implementation and effectiveness and to determine if changes are needed.

The Memorandum of Understanding, between the USDA Forest Service and the Oregon Department of Environmental Quality, To Meet State and Federal Water Quality Rules and Regulations, specifically identifies the implementation of site specific BMPs as one of the Forest Service responsibilities to satisfy State and Federal point and nonpoint source pollution control requirements on National Forest Service lands.

Below are applicable BMPs, listed in the General Water Quality Best Management Practices (USDA Forest Service Pacific Northwest Region, 1988) document that will be used with the Galena Project, along with information as to who will be responsible for implementing them, when they will be done, and a determination of ability to implement, and effectiveness:

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
T-1	Timber Sale Planning Process	To introduce water quality and hydrologic considerations into the timber sale planning process.	Hydrologist	Prior to Activity	High	High
T-2	Timber Harvest Unit Design	To ensure that timber harvest unit design will secure favorable conditions of water flow, water quality, and fish habitat.	Hydrologist with other IDT members	Prior to Activity	High	High
T-3	Use of Erosion Potential Assessment for Timber harvest Unit Design	To prevent downstream water quality degradation by the timely identification of areas with high erosion potential and adjustment of harvest unit design.	Hydrologist, Soil Specialist	Prior to Activity	High	High
T-4	Use of Sale Area Maps for Designating Water Quality Protection Needs	To delineate the location of protection areas and available water sources as a guide for both the Purchaser and the Sale Administrator, and to ensure their recognition and proper consideration and protection on the ground.	Hydrologist, Pre-Sale Specialists	Prior to Activity	High	High
T-5	Limiting the Operating Period of Timber Sale	To ensure that the Purchaser conducts operations in a timely manner, within the	Hydrologist, Soil Specialist, Timber Sale Administrators	Prior to Activity	High	Moderate

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
	Activities	time period specified in the Timber Sale Contract.				
T-6	Protection of Unstable Lands	To provide for identification and appropriate management prescriptions for unstable lands.	Hydrologist, Soil Specialist, Pre-Sale Specialists	Prior to Activity	High	High
T-7	Streamside Management Unit Designation	To designate a riparian area or zone along streams and wetlands where prescriptions are made that will minimize potential adverse effects of nearby logging and related land disturbance activities on water quality and beneficial uses.	Hydrologist, Fish Biologist, Soil Specialist, Botanist	Prior to Activity	High	High
T-8	Streamcourse Protection (Implementation and Enforcement)	(1) To protect the natural flow of streams, (2) to provide unobstructed passage of stormflows, and (3) to prevent sediment and other pollutants from entering streams.	Timber Sale Administrator, Purchaser's Representative (through Timber Sale Contract)	During Activity	High	High
T-9	Determining Tractor Loggable Ground	To protect water quality from degradation caused by tractor logging ground disturbance.	Hydrologist, Soil Specialist, Pre-Sale Specialist, Timber Sale Administrator	Prior to Activity	High	High
T-10	Log Landing	To locate landings in such a way as to minimize creation	Hydrologist, Soil Specialist, Pre-Sale	Prior to and During	High	High

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
	Location	of hazardous watershed conditions.	Specialist, Timber Sale Administrator	Activity		
T-11	Tractor Skid Trail Location and Design	To minimize the area compacted, erosion, and runoff water.	Hydrologist, Soil Specialist, Timber Sale Administrator	During Activity	High	High
T-12	Suspended Log Yarding in Timber Harvesting	(1) To protect soils from excessive disturbance, and (2) to maintain the integrity of the SMU and other sensitive watershed areas.	Hydrologist, Soil Specialist, Pre-Sale Specialist, Timber Sale Administrator	During Activity	High	High
T-13	Erosion Prevention and control Measures During Timber Sale Operations	To ensure that the Purchaser's operations shall be conducted to minimize soil erosion.	Timber Sale Administrator and Forest Service Representative	During Activity	High	High
T-14	Revegetation of Areas Disturbed by Harvest Activities	To establish a vegetative cover on disturbed sites to prevent erosion and sedimentation.	Hydrologist, Soil Specialist, Pre-Sale Specialist, Timber Sale Administrator	Prior to and During Activity	High	Moderate
T-15	Log Landing Erosion Prevention and Control	To reduce the impacts of erosion and subsequent sedimentation, on log landings, by use of mitigating measures.	Hydrologist, Soil Specialist, Timber Sale Administrator; Purchaser's Representative (through the Timber Sale Contract)	During Activity	High	High

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
T-16	Erosion Control on Skid Trails	To protect water quality by minimizing erosion and sedimentation derived from skid trails.	Hydrologist, Soil Specialist, Timber Sale Administrator; Purchaser's Representative (through the Timber Sale Contract)	During Activity	High	High
T-17	Meadow Protection During Timber Harvesting	To avoid locating roads, landings, and skid trails in meadows.	Hydrologist, Soil Specialist, Pre-Sale Specialists, Timber Sale Administrator;	During Activity	High	High
T-18	Erosion Control Structure Maintenance	To ensure that constructed erosion control structures are stabilized and working.	Timber Sale Administrator and Purchaser's Representative (through the Timber Sale Contract)	During Activity	Moderate	High
T-19	Acceptance of Timber Sale Erosion control Measures Before Sale Closure	To assure the adequacy of required erosion control work on timber sales.	Timber Sale Administrators, Hydrologists, Soil Specialists	During Activity	High	High
T-20	Reforestation	To reforest all suitable land harvested within five years after the regeneration cut and to promptly reforest all other suitable areas not harvested but in need of reforestation.	Silviculturist, Hydrologist, Soil Specialist, other IDT members	At Completion of Activity	High	High

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
T-21	Servicing and Refueling of Equipment	To prevent pollutants such as fuels, lubricants, bitumens, raw sewage, wash water and other harmful materials from being discharged into or near, rivers, streams and impoundments or into natural or man-made channels leading thereto.	Timber Sale Administrator, Contracting Officer's Representative, Engineering Representative	During Activity	High	High
T-22	Modification of the TSC	To modify the TSC if new circumstance or conditions arise and indicate that the timber sale will irreversibly damage soil, water, or watershed values	Line Officer with Purchaser (through the Timber Sale Contract) or Chief of the Forest Service	During Activity	High	High
R-1	General Guidelines for the Location and Design of Roads	To locate and design roads with minimal resource damage.	Responsible Official with assistance of IDT members including Engineering Representative, Timber Sale Administrator, and Pre-Sale Specialists	Prior to Activity	High	High
R-2	Erosion Control Plan	To limit and mitigate erosion and sedimentation through effective planning prior to initiation of road construction activities and through effective contract administration during construction.	Design Engineers with other IDT members, Pre-Sale Specialists, Timber Sale Administrators	Prior to and During Activity	High	Moderate

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
R-3	Timing of Construction Activities	To minimize erosion by conducting road construction operations during minimal runoff periods.	Design Engineers with other IDT members and Timber Sale Administrators, and Purchaser's Representative (through the Timber Sale Contract)	During Activity	High	Moderate
R-4	Road Slope Stabilization (Planning)	To reduce sedimentation by minimizing erosion from road slopes and minimizing the chances for slope failures along roads.	Hydrologist, Soil Specialist, Project Engineer, and other members of IDT	During Activity	High	Moderate
R-5	Road Slope and Water Area Stabilization (Preventive)	To minimize soil erosion from cut slopes, fill slopes, and waste areas.	COR or Engineering Representative	During Activity	High	Moderate
R-6	Dispersion of Subsurface Drainage Associated with Roads	To minimize the possibilities of roadbed and cut or fill slope failure and the subsequent production of sediment.	Hydrologist, Soil Specialist, Project Engineer, Engineering Representative or other COR, Purchaser's Representative (through Timber Sale Contract)	During Activity	High	Moderate
R-7	Control of Surface Road Drainage Associate with Roads	(1) To minimize the erosive effects of water concentrated by road drainage features, (2) to disperse runoff from or	Hydrologist, Soil Specialist, Project Engineer, Engineering Representative or other	During Activity	High	Moderate

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
		through the road, and (3) to minimize the sediment generated from the road.	COR, Purchaser's Representative (through Timber Sale Contract)			
R-8	Constraints Related to Pioneer Road Construction	To minimize sediment production and mass wasting problems associated with pioneer road construction.	Hydrologist, Soil Specialist, Project Engineer, Engineering Representative or other COR, Purchaser's Representative (through Timber Sale Contract)	During Activity	High	Moderate
R-9	Timely Erosion Control Measures on Incomplete Roads and Stream Crossing Projects	To minimize erosion of and sedimentation from disturbed ground on incomplete projects.	Hydrologist, Soil Specialist, Project Engineer, Engineering Representative or other COR, Purchaser's Representative (through Timber Sale Contract)	During Activity	High	High
R-10	Construction of Stable Embankments (Fills)	To construct embankments with materials and methods which minimize the possibility of failure and subsequent water quality degradation.	Hydrologist, Soil Specialist, Project Engineer, Engineering Representative or other COR, Purchaser's Representative (through Timber Sale Contract)	During Activity	High	Moderate
R-11	Control of Sidecast Material	To minimize sediment production originating from sidecast material during road construction or maintenance.	Hydrologist, Soil Specialist, Project Engineer, Engineering Representative or other COR, Purchaser's	During Activity	High	High

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
			Representative (through Timber Sale Contract)			
R-12	Control of Construction in Streamside Management Units	<p>To reduce the adverse effects of sediment from nearby roads on slope stability, vegetation, and aquatic resources along a designated stream zone by</p> <p>a. Acting as an effective filter for sediment generated by erosion from road fills, dust drift, and oil traces; b. Maintaining shade, riparian habitat (aquatic and terrestrial), and channel stabilizing effects; c. Maintaining the floodplain in an undisturbed condition.</p>	Hydrologist, Soil Specialist, Project Engineer, Engineering Representative or other COR, Purchaser's Representative (through Timber Sale Contract)	During Activity	High	High
R-13	Diversion of Flows Around Construction Sites	(1) To ensure that all stream diversions are carefully planned, (2) to minimize downstream sedimentation, and (3) to restore stream channels to their natural grade, condition, and alignment as soon as possible.	Hydrologist, Soil Specialist, Project Engineer, Engineering Representative or other COR, Purchaser's Representative (through Timber Sale Contract)	During Activity	High	High
R-14	Bridge and Culvert	To minimize sedimentation and turbidity resulting from	Hydrologist, Soil Specialist, Project	During Activity	High	High

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
	Installation and Protection of Fisheries	excavation for in-channel structures.	Engineer, Engineering Representative or other COR, Purchaser's Representative (through Timber Sale Contract)			
R-15	Disposal of Right-of-Way and Roadside Debris	(1) to ensure that debris generated during road construction is kept out of streams and to prevent slash and debris from subsequently obstructing channels, and (2) to prevent debris dams which obstruct fish passage, or which could result in downstream damage from high water flow surges after dam failure.	Hydrologist, Soil Specialist, Project Engineer, Engineering Representative or other COR, Purchaser's Representative (through Timber Sale Contract)	During Activity	High	High
R-18	Maintenance of Roads	To maintain roads in a manner which provides for water quality protection by controlling the placement of waste material, keeping drainage facilities open, and by repairing ruts and failures to reduce sedimentation and erosion.	Engineering Representative	During Activity	High	High
R-19	Road Surface Treatment to Prevent Loss of	To minimize the erosion of road surface materials and consequently reduce the likelihood of sediment	Project Engineer, Engineering Representative, and Purchaser (through	During Activity	High	High

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
	Materials	production from those areas.	Timber Sale Contract)			
R-20	Traffic Control During Wet Periods	(1) To reduce road surface damage and rutting of roads, and (2) to lessen sediment washing from damaged road surfaces.	Timber Sale Administrator, Engineering Representative, and Purchaser (through Timber Sale Contract)	During Activity	High	High
R-21	Snow Removal Controls to Avoid Resource Damage	To minimize the impact of melt water on road surfaces and embankments and to consequently reduce the probability of sediment production resulting from snow removal operations.	Timber Sale Administrator, Engineering Representative, and Purchaser (through Timber Sale Contract)	During Activity	High	High
R-22	Restoration of Borrow Pits and Quarries	To minimize sediment production from borrow pits and quarry sites.	Timber Sale Administrator, Engineering Representative, and Purchaser (through Timber Sale Contract)	During Activity	High	High
R-23	Obliteration of Temporary Roads and Landings	To reduce sediment and restore productivity of the land at the completion of intended use.	Silviculturist, Hydrologist, Soil Specialist, Timber Sale Administrator, and Purchaser (through Timber Sale Contract)	During Activity	High	High
F-2	Consideration of Water Quality in	To provide for water quality protection while achieving	Hydrologist, Fire Management Officer,	Prior to Activity	High	High

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
	Formulating Prescribed Fire Prescriptions	the management objectives through the use of prescribed fire.	Line Officer			
F-3	Protection of Water Quality During Prescribed Fire Operations	To maintain soil productivity, minimize erosion, and prevent ash, sediment, nutrients, and debris from entering water bodies.	Hydrologist, Soil Specialist, Fire Boss	Prior to and During Activity	High	High
VM-1	Slope Limitations for Tractor Operation	To reduce gully and sheet erosion and associated sediment production by limiting tractor use.	Soil Scientist, Pre-Sale Specialists, Timber Sale Administrator	Prior to and During Activity	High	High
VM-2	Tractor Operation Excluded from Wetlands and Meadows	To limit turbidity and sediment production resulting from compaction, rutting, runoff concentration, and subsequent erosion.	Hydrologist, Fish Biologist, Soils Specialist, Botanist, and other IDT members including Pre-Sale Specialists, Timber Sale Administrator	Prior to Activity	High	High
VM-3	Revegetation of Surface Disturbed Areas	To protect water quality by minimizing soil erosion through the stabilizing influence of vegetation.	Hydrologist and other members of IDT team, Pre-Sale Specialists, Timber Sale Administrator	At Completion of Activity	High	High
VM-4	Soil Moisture Limitations for Tractor Operation	The objective of this measure is to prevent compaction, rutting, and gullyng and production of sediment and	Timber Sale Administrator or other COR	During Activity	High	High

BMP Number	Title	Objective	Implementation Responsibility	Timing	Ability to Implement	Effectiveness
		turbidity.				
RM-1	Rangeland Improvements	Safeguard water quality under sustained forage production and manage forage harvest by livestock and wildfire.	Hydrologist, Range Specialist, COR or Project Supervisor or Permittee	Prior to and During Activity	High	High
W-5	Cumulative Watershed Effects	To ensure that the additional effects of the proposed management activities, when added to the existing conditions, do not exceed thresholds of concern or result in adverse (degraded) water quality or channel/fish habitat conditions.	Hydrologist	Prior to Activity	High	High